

CLAIMS

1. An identifying marker attached as a identification target to a product or service provided by a client for identification of said product or service,

the identifying marker being characterized in that at least a portion of said identification target is formed by a planar arranged fibrous body made of an optical interference fiber comprising an alternate laminated body obtained by laminating layers of polymers with different refractive indexes in an alternating fashion.

2. The identifying marker according to claim 1, wherein if P polarized light and S polarized light are respectively defined as the transmitted light from the polarizing plate slit when the slit axis of the polarizing plate is situated parallel and perpendicular to a direction of orientation of said fibrous body, said fibrous body has color difference anisotropy between said P polarized light and S polarized light.

3. The identifying marker according to claim 1, wherein the layer thickness is 0.02-0.3  $\mu\text{m}$  for each layer of said alternate laminated body, and the count of layers is 5-120 layers.

4. The identifying marker according to claim 1, which has a protective layer surrounding said alternate laminated body.

5. The identifying marker according to claim 1, wherein when the polymers with different refractive indexes of said alternate laminated body are designated as: polymer A as the polymer with the high refractive index and polymer B as the polymer with the low refractive index, (said polymer A)/(said polymer B) is a combination selected from the group consisting of the following:

(polyethylene terephthalate having a metal sulfonate salt-containing dibasic acid component copolymerized at 0.3-10

mole percent with respect to the total dibasic acid component)/(polymethyl methacrylate with an acid value of 3 or greater), (polyethylene naphthalate having a metal sulfonate salt-containing dibasic acid component copolymerized at 0.3-5 mole percent with respect to the total dibasic acid component forming the polyester)/(aliphatic polyamide), (copolymerized aromatic polyester obtained by copolymerization of a dibasic acid component and/or a glycol component with at least one alkyl group on a side chain, copolymerized at 5-30 mole percent with respect to the total repeating units)/(polymethyl methacrylate), (polycarbonate having 4,4'-hydroxydiphenyl-2,2-propane as a dihydric phenol component)/(polymethyl methacrylate), (polycarbonate having 4,4'-hydroxydiphenyl-2,2-propane as a dihydric phenol component)/(poly(4-methylpentene)), and (polyethylene terephthalate)/(aliphatic polyamide).

6. The identifying marker according to claim 1, which has, inside the alternating laminated body, a 3-component polymer layer formed in addition to the polymers forming said alternate laminated body.

7. The identifying marker according to claim 6, wherein said 3-component polymer layer comprises metal fine particles.

8. The identifying marker according to claim 1, which comprises, as an identifier, a portion wherein the optical interference fiber is used to construct a body of an identifiable size as a nonwoven fabric, woven fabric, knitted fabric, embroidered fabrics and/or paper.

9. The identifying marker according to claim 1, wherein said fibrous body is a mixture of different types of optical interference fibers having different wavelengths for interference light ranging from the infrared region to the ultraviolet region.

10. The identifying marker according to claim 1, wherein said identification target has a painted or dyed, and/or ink-painted or textile printed, and/or printed identifying section

containing said optical interference fiber as shortly cut staple fibers.

11. An identifying method for an identifying marker whereby an identification target attached to a product or service is identified, the method being characterized by constructing at least a portion of said identification target of a fibrous body provided with an optical interference fiber composed of an alternate laminated body obtained by laminating layers of polymers with different refractive indexes in an alternating fashion, and detecting a unique attribute of said optical interference fiber to identify the product or service.

12. The identifying method for an identifying marker according to claim 11, characterized in that, if P polarized light and S polarized light are respectively defined as a transmitted light from a polarizing plate slit when the slit axis of the polarizing plate is situated parallel and perpendicular to a direction of orientation of said fibrous body, a color difference anisotropy between said P polarized light and S polarized light is detected to identify said product or service.

13. The identifying method for an identifying marker according to claim 11, whereby a color difference ( $\Delta E$ ) of 3.0 or greater between said P polarized light and S polarized light is detected to identify said product or service.

14. The identifying method for an identifying marker according to claim 11, wherein interference light composed of infrared, visible and/or ultraviolet light is detected as radiated light and/or reflected light from said fibrous body to identify said identification target.

15. The identifying method for an identifying marker according to claim 11, wherein a polymer layer containing fine particles made of an inorganic, organic and/or metallic material having an identifying function is formed inside said alternate laminated body, and the presence of said fine particles is detected by said identifying function of said

particles, in order to identify said identification target.

16. The identifying method for an identifying marker according to claim 11, wherein said identification target is identified by image recognition of said alternate laminated body contained in said optical interference fiber.

17. An identifying system for an identifying marker comprising at least an identifying marker attached to a product or service, a fibrous body composed of an alternate laminated body obtained by laminating layers of polymers with different refractive indexes in an alternating fashion and having optical interference fibers contained in at least a part of the identification target, and unique attribute detecting means for detecting a unique attribute of said optical interference fibers.

18. The identifying system for an identifying marker according to claim 17, which includes an identifying marker comprising said fibrous body possessing at least one specific unique attribute of said optical interference fiber,

a database for storing reference data relating to said specific unique attribute of said fibrous body and to said product or service, and

checking means for checking the unique attribute detected by said unique attribute detecting means against the reference data stored in said reference database.

19. The identifying system for an identifying marker according to claim 18, wherein said reference database and checking means are provided in a freely connectable manner to a server via a telecommunication network.

20. The identifying system for an identifying marker according to claim 17, wherein said unique attribute detecting means is a polarizing plate which detects color difference anisotropy between said P polarized light and S polarized light, where P polarized light and S polarized light are respectively defined as a transmitted light from said polarizing plate slit when it is situated parallel and

perpendicular to the direction of fiber orientation of said fibrous body.

21. The identifying system for an identifying marker according to claim 17, wherein said unique attribute detecting means is a spectrophotometer for detection of a color difference ( $\Delta E$ ) of 3.0 or greater between said P polarized light and S polarized light.

22. The identifying system for an identifying marker according to claim 21, wherein said spectrophotometer is a spectrophotometer for detecting a color difference ( $\Delta E$ ) at a specific wavelength from the infrared region to the ultraviolet region.

23. The identifying system for an identifying marker according to claim 17, wherein said unique attribute detecting means is a fluorescent X-ray analyzer for detecting fine particles made of an inorganic, organic and/or metallic material having an identifying function, which are present in the polymer layer formed inside said alternate laminated body.

24. The identifying system for an identifying marker according to claim 17, wherein said unique attribute detecting means is image recognizing means for recognizing an image of said alternate laminated body.

25. A method of providing an identification service which comprises:

a presenting step for presenting identifying marker data containing at least specifications and form of distribution relating to a client's product or service bearing the identifying marker from a service provider to a client,

a selection step for selecting an unique attribute from among the unique attributes of an optical interference fiber comprising an alternate laminated body obtained by laminating layers of polymers with different refractive indexes in an alternating fashion, based on the presented identifying marker data, in order to identify the product or service,

a determining step for determining the attachment mode

for attaching said identifying marker, of which at least a portion contains a planar arranged fibrous body as the identification target, to the product or service,

a fabricating step for fabricating said identifying marker having the selected unique attribute into said attachment mode, and

a providing step for providing the fabricated identifying marker to the client.

26. The method of providing an identification service according to claim 25, which includes a matching step for uniquely matching said unique attribute selected by the service provider in a one-to-one correspondence with said product or service, and a storing step for storing the matched information in a database.

27. The method of providing an identification service according to claim 26, which also comprises a reading step for reading the unique attribute conveyed from said identifying marker attached to said product or service, a checking step for checking the read unique attribute against data stored in said database, and an ascertaining step for ascertaining said product or service based on said checking step.

28. The method of providing an identification service according to claim 25, wherein said unique attribute is the color difference anisotropy between said P polarized light and S polarized light at one or more specific wavelengths.